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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/802,862 | 03/18/2004 | Yun Chur Chung | 119133 | 7720 |
| 25944 | 7590 | 10/31/2005 | EXAMINER | |
| OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320 | | | BLEVINS, JERRY M | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2883 | |

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|----------------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/802,862 | CHUNG ET AL. |
| | Examiner Jerry Martin Blevins | Art Unit 2883 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 18 March 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 7 and 8 is/are allowed.
- 6) Claim(s) 1 is/are rejected.
- 7) Claim(s) 2-6 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 18 March 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 18 March 2004.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by US Patent to Way et al., number 6,583,903.

Regarding claim 1, Way teaches a method for reducing system deterioration caused by polarization effects when an optical signal is transmitted to a destination using an optical transmission system having an optical path comprised of fast and slow polarization axes (column 1, lines 48-58 and column 7, line 66 – column 8, line 14), comprising the steps of: a) controlling a transmission end to divide the optical signal into two polarization components orthogonal to each other within one bit before transmitting the optical signal so that PMD (Polarization Mode Dispersion) can be compensated in the optical path (column 1, line 48 – column 2, line 4, column 5, lines 32-43, and column 7, line 66 – column 8, line 20); and applying one polarization component of the two orthogonal polarization components to the fast polarization axis of the optical path, applying the other polarization component of the two orthogonal polarization

components to the slow polarization axis of the optical path, and reducing the influence of the PMD using a predetermined effect indicative of a pulse width reduction caused by the PMD (column 7, line 66 – column 8, line 47).

Allowable Subject Matter

Claims 2-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7 and 8 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 2, Way teaches the limitations of the base claim 1. Way does not teach that step (a) includes the steps (a1), (a2), and (a3). US Pre Grant Publication to Liang et al., teaches the steps of: a1) controlling a first intensity modulator driven by a data signal to modulate an output signal of a light source into a NRZ (Non Return to Zero) signal (paragraph 27, pages 3 and 4); and a2) controlling a second intensity modulator driven by a clock frequency signal synchronized with the data signal to modulate the NRZ signal into an RZ (Return to Zero) signal (paragraph 27, pages 3 and 4). However, Way, either alone or in combination with Liang, does not disclose or render obvious the step of a3) applying the RZ signal to a component inducing a DGD (Differential Group Delay) corresponding to 30-70% of a period of the data signal at an

angle of 45 degrees with respect to a reference polarization axis so that only one polarization component is delayed by 30-70% of the data signal's period.

Claim 3 is indicated as allowable based on its dependence from claim 2.

Regarding claim 4, Way teaches the limitations of the base claim 1. Way does not teach that step (a) includes the steps (a1) and (a2). US Pre Grant Publication to Liang et al., teaches the step of: a1) controlling a first intensity modulator driven by a data signal to modulate an output signal of a light source into a NRZ (Non Return to Zero) signal (paragraph 27, pages 3 and 4. However, Way, either alone or in combination with Liang, does not disclose or render obvious the step of a2) controlling a polarization modulator driven by a clock frequency signal synchronized with the data signal to return the NRZ signal to a signal polarized by a predetermined ratio 30-70% within one bit, whereby the output optical signal of the transmission end can simultaneously contain two polarization components within one bit.

Regarding claim 5, Way teaches the limitations of the base claim 1. However, Way, either alone or in combination with the prior art of record, does not disclose or render obvious that step (a) includes the step of: performing a signal modulation process, such that one sub-polarization component contained in the two orthogonal polarization components (each composed of two sub-polarization components) between nearby bits has the same phase as the other sub-polarization component, and a remaining sub-polarization component contained in the two orthogonal polarization components between nearby bits has a phase opposite to that of a counterpart sub-polarization component of the remaining sub-polarization component.

Claim 6 is indicated as allowable based on its dependence from claim 5.

Regarding claim 7, Way teaches an apparatus for reducing system deterioration caused by polarization effects (column 1, lines 48-58 and column 7, line 66 – column 8, line 14), comprising: a transmission end including: a light source (column 1, lines 13-20), and a transmission end polarization controller for controlling the polarization direction of a polarization modulated signal (column 2, line 33 – column 3, line 47). Way does not teach the further limitations. Liang teaches a first intensity modulator driven by a data signal, for modulating an output signal of the light source into an NRZ signal and a second intensity modulator driven by a clock frequency signal synchronized with the data signal, for modulating the NRZ signal received from the first intensity modulator into an RZ signal. However, Way, either alone or in combination with Liang, does not disclose or render obvious a polarization modulator driven by a signal having a frequency equal to half a frequency of the clock frequency signal, for modulating the RZ signal received from the second intensity modulator into another signal so that individual nearby bits have polarization components orthogonal to each other and a PMF (Polarization Maintaining Fiber) for controlling a polarization direction of the polarization-modulated signal to be equal to an angle of 45 degrees on the basis of its own polarization axis, and generating a difference between group velocities of two orthogonal polarization components.

Regarding claim 8, Way teaches an apparatus for reducing system deterioration caused by polarization effects (column 1, lines 48-58 and column 7, line 66 – column 8, line 14), comprising: a transmission end including: a light source (column 1, lines 13-

20), and a transmission end polarization controller for controlling the polarization direction of a polarization modulated signal (column 2, line 33 – column 3, line 47). Way does not teach the further limitations. Liang teaches a first intensity modulator driven by a data signal, for modulating an output signal of the light source into an NRZ signal and a second intensity modulator driven by a clock frequency signal synchronized with the data signal, for modulating the NRZ signal received from the first intensity modulator into an RZ signal. However, Way, either alone or in combination with Liang, does not disclose or render obvious a PMF (Polarization Maintaining Fiber) for controlling a polarization direction of the polarization-modulated signal to be equal to an angle of 45 degrees on the basis of its own polarization axis, and generating a difference between group velocities of two orthogonal polarization components.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMB



Brian Healy
Primary Examiner